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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/280,518	04/05/1999	KENSUKE FUJIWARA	32739M008	5926

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WASHINGTON, DC 20036

EXAMINER

PHAM, HAI CHI

ART UNIT	PAPER NUMBER
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.2861

DATE MAILED: 07/15/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Applicant No.

09/280,518

Applicant(s)

FUJIWARA, KENSUKE

Examiner

Hai C Pham

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 April 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 6-13 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 6-13 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 6-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's Admitted Prior Art as illustrated in Figs. 5 and 6 and accompanying discussion in the specification (referred to hereinafter as 'AAPA') in view of Arevalo (U.S. 6,104,986) and Sugiyama et al. (U.S. 5,737,665).

AAPA discloses an iterative algorithm for determining a particular value (maximum laser intensity) for a particular constant value (dark potential of the photoreceptor surface), wherein a photoreceptor (1) is exposed with the maximum laser intensity and measured to provide information so as to determine whether the measured value matches the constant value.

However, AAPA does not suggest the claimed algorithm including the repeated and converging division of intensity into intervals.

Arevalo clearly discloses the claimed algorithm in general in Fig. 4, which includes the first second detecting step with the input values being divided by half to obtain a first interval, and the second detecting step in which the optimum input value obtained in the first detecting step is further divided by half such that the second interval is smaller than

the first interval. While Arevalo does not disclose application of the algorithm to laser intensity adjustment, the disclosure is reasonably pertinent to the claimed invention since it solves the same problem of determining the optimal value of a variable for a given constant variable in the same manner as Applicant. The purpose of implementation of the algorithm is to reduce the length of an optimization process, as suggested in the Background and Summary of the Arevalo disclosure. Further, the AAPA and Arevalo prior art disclosures considered together suggest that the Arevalo algorithm is faster in optimizing than the AAPA algorithm. Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize the algorithm disclosed by Arevalo in combination with exposure and measurement disclosed by AAPA for the purpose of reducing the length of optimization in adjustment of the laser intensity for a particular potential. Setting of laser intensity greater than a suitable maximum intensity is suggested since the tested value is suggested to always be within the range being tested (see column 5, lines 44-67).

On the other hand, although AAPA discloses the exposure of the photoreceptor surface being performed repeatedly with further adjustment of the maximum intensity of the laser beam such that the measurement of the residual potentials can be made (Fig. 5), AAPA does not expressly disclose the plurality of exposed patch portions being rectangular in shape and spaced apart from each other on the photoreceptor surface.

However, it is well known in the printing art that the calibration test patterns are formed on the photoreceptor surface as rectangular patches and that the individual patches are spaced apart from each other as evidenced by Sugiyama et al., which teaches a plurality of rectangular test patterns being formed on the surface of the drum

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(col. 3, lines 21-32) (Fig. 4), each pattern being separated from the other such that the density measurement of each pattern can be accurately performed.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to provide a plurality of rectangular test patterns separated in space as taught by Sugiyama et al. in the modified device of AAPA. The motivation for doing so would have been to allow easy detection and reading of the test patterns as well as accurate measurement of the residual potentials.

Response to Arguments

3. Applicant's arguments with respect to claims 6-13 have been considered but are moot in view of the new grounds of rejection presented in this Office action.

Additional Prior Arts

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Ota (JP 10-73975) discloses a plurality of rectangular test patches, spaced apart from each other, being formed on the photoreceptor's surface, and a potential sensor for measuring the surface potential of each patch to determine the characteristics of the photoreceptor.

Horiyama et al. (JP 10-63046) discloses a plurality of rectangular reference patches being separated formed on the surface of the photosensitive drum such that precise toner concentration detection can be achieved.

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Mizoguchi (U.S. 5,406,390) discloses a series of individual rectangular patches being formed on the photosensitive drum for density measurement such that the modulation of the light beam can be adjusted accordingly.

Bisaiji et al. (U.S. 5,913,092) discloses a number of rectangular latent image patterns being formed at a predetermined interval on the surface of the photoreceptor along with a potential sensor for detecting the adhering amount of toner.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hai C Pham whose telephone number is (703) 308-1281. The examiner can normally be reached on T-F (8:30-5:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Benjamin R. Fuller can be reached on (703) 308-0079. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722, (703) 308-7724, (703) 308-7382, (703) 305-3431, (703) 305-3432 for regular communications and for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.



HAI PHAM
PRIMARY EXAMINER

July 7, 2003